AMENDMENTS TO THE CLAIMS

This listing of the claims replaces all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS

1. **(Currently Amended)** A system for conveying an arbitrary mixture of high and low latency traffic streams across a common switch fabric, the system comprising:

at least two diverse paths mapped through the switch fabric from a common input interface to a common output interface, each path being optimized to satisfy respective different latency requirements; and

a latency classifier adapted to route each traffic stream to a selected path optimized to satisfy latency requirements most closely matching a respective latency requirement of the traffic stream.

2. **(Original)** A system as claimed in claim 1, wherein traffic streams within a first one of the paths are processed independently of traffic streams within a second one of the paths.

3. **(Original)** A system as claimed in claim 2, wherein each path is mapped through respective different physical infrastructure of the switch fabric.

4. **(Original)** A system as claimed in claim 2, wherein two or more paths are mapped through a common physical infrastructure capable of supporting the path optimized to satisfy the most demanding latency requirements.

5. **(Original)** A system as claimed in claim 1, wherein the latency classifier is adapted to selectively couple each one of a plurality of upstream channels of the network to a selected one of the paths, such that a respective traffic stream of a communications session mapped through one of the upstream channels is automatically routed to the selected path.

6. **(Original)** A system as claimed in claim 5, wherein the selected path is determined at a time of set-up of the communications session.

7. **(Original)** A system as claimed in claim 5, wherein the latency classifier is further adapted to extract network management and critical mission message content from each traffic stream.

8. **(Original)** A system as claimed in claim 7, wherein the latency classifier is further adapted to route the extracted network management and critical mission message content to a different path from that of each traffic stream

9. **(Original)** A system as claimed in claim 1, wherein each path comprises a respective input queue adapted to buffer data of each traffic stream being conveyed through the path.

10. **(Original)** A system as claimed in claim 9, wherein each path further comprises a respective prioritization classifier adapted to control a priority of each traffic stream being conveyed through the path.

11. **(Original)** A system as claimed in claim 10, wherein the input queue comprises:

at least two parallel buffers, each buffer being adapted to store data of at least one traffic stream being conveyed through the path; and

a scheduler for controlling transmission of data from each buffer through the path.

12. **(Original)** A system as claimed in claim 11, wherein the traffic streams being conveyed through the path comprise network management and critical mission messages, and the prioritization classifier is adapted to route the network management and critical mission messages to a selected one of the parallel buffers.

13. **(Original)** A system as claimed in claim 11, wherein the prioritization classifier is adapted to route each traffic stream to a selected one of the buffers based on a content of a predetermined field of the respective overhead of each traffic stream.

14. **(Original)** A system as claimed in claim 13, wherein the predetermined field comprises a respective K-byte field of each Synchronous Optical Network (SONET) traffic stream being conveyed through the path.

15. **(Original)** A system as claimed in claim 13, wherein the predetermined field comprises a respective Differentiated Services Code Point (DSCP) field of each Internet Protocol (IP) traffic stream being conveyed through the path.

16. **(Original)** A system as claimed in claim 1, further comprising a fairness classifier disposed at an egress of each path, each fairness classifier being adapted to separate responsive and non-responsive traffic streams received through the respective path.

17. **(Original)** A system as claimed in claim 16, wherein the fairness classifier is adapted to route each of the responsive and non-responsive traffic streams to a respective buffer.

18. **(Currently Amended)** A method of conveying an arbitrary mixture of high and low latency traffic streams across a common switch fabric, the method comprising a step of:

routing each traffic stream to a selected one of at least two diverse paths mapped through the switch fabric from a common input interface to a common output interface, each path being optimized to satisfy respective different latency requirements, the selected path being optimized to satisfy latency requirements most closely matching a respective latency requirement of the traffic stream.

19. **(Original)** A method as claimed in claim 18, further comprising a step of processing traffic streams within a first one of the paths independently of traffic streams within a second one of the paths.

20. **(Original)** A method as claimed in claim 18, further comprising a step of buffering each traffic stream being conveyed through the path within a respective input queue of the path.

21. **(Original)** A method as claimed in claim 18, further comprising a step of selectively coupling each one of a plurality of upstream channels to a selected one of the paths, such that a respective traffic stream of a communications session mapped through one of the upstream channels is automatically routed to the selected path.

22. **(Original)** A method as claimed in claim 21, wherein the selected path is determined at a time of set-up of the communications session.

23. **(Original)** A method as claimed in claim 21, further comprising steps of:

extracting network management and critical mission message content from each traffic stream; and

routing the extracted message content to a different path from that of each traffic stream.

24. **(Original)** A method as claimed in claim 20, further comprising a step of controlling a priority of each traffic stream being conveyed through the path.

25. **(Original)** A method as claimed in claim 24, wherein the step of controlling the priority of each traffic stream comprises steps of:

routing each traffic stream to a selected one of at least two parallel buffers, each buffer being adapted to store data of at least one traffic stream being conveyed through the path, the selected buffer being selected based on a content of a predetermined field of the respective overhead of each traffic stream; and

controlling transmission of data from each buffer through the path.

26. **(Original)** A method as claimed in claim 25, wherein the predetermined field comprises a respective K-byte field of each Synchronous Optical Network (SONET) traffic stream being conveyed through the path

27. **(Original)** A method as claimed in claim 25, wherein the predetermined field comprises a respective Differentiated Services Code Point (DSCP) field of each Internet Protocol (IP) traffic stream being conveyed through the path.

28. **(Original)** A method as claimed in claim 18, further comprising a step of separating responsive and non-responsive traffic streams at a respective egress end of each path.